

Melvin Butte Forest Management Project
Dwarf Mistletoe Silvicultural Marking Implementation Guidelines

Setting ID (stands)

EA Unit #18,19,20,21,22,23,24,25,95

Stewardship Imp Units 15, 21, 22, 23, 24, 25, 26, 27

Fuels Imp # TBD

Updated 12/14/2015

Existing condition-

Table 1-Stand statistics derived from Lidar determined tree points.

Unit	Acres	Avg. DBH (BA adj)	Non-saw		Saw		BA/total	Non-saw		Saw	
			BA/acre 0-4.9"	BA/acre 5-8.9"	BA/acre 9-20.9"	BA/acre 21"+		TPA 0-4.9"	TPA 5-8.9"	TPA 9- 20.9"	TPA 21"+
15	6	6.3	12	48	24	0	85	162	192	39	0
21	35	10.0	5	17	85	33	141	107	65	75	10 (5 PIPO)
22	12	7.7	10	18	47	23	97	180	74	39	7(4 PIPO)
23	13	6.8	9	27	35	5	75	150	109	35	2 (2 PIPO)
24	36	6.9	11	29	35	15	91	183	118	39	5 (2 PIPO)
25	21	6.6	8	31	31	5	75	158	119	40	1 (1 PIPO)
26	8	10.1	5	14	56	52	127	112	52	49	17 (7 PIPO)
27	26	7.0	12	32	30	20	93	175	139	30	6 (3 PIPO)

Marking Goals

- Favor ponderosa and lodgepole pine
- Protect young adjacent stands from further ponderosa pine dwarf mistletoe infection
- Where possible and feasible¹, utilize white fir trees in order to contain/ block potential dwarf mistletoe influences (esp. south-southwest end of Unit 21).
 - Consider elevation and slope in this consideration
- Remove where possible, else clump and buffer dwarf mistletoe in the unit
- Retain clumps of large ponderosa pine ($\geq 21"$ dbh)
- Ensure a variable and irregular distribution of stems to include ponderosa pine, lodgepole pine and white fir
- In Unit 15, 23, 24, 25, 27 maintain all large ponderosa pine ($\geq 21"$ dbh) regardless of location or condition²
- Retain all snags

¹ Possible and feasible- conditional situations where white fir acts as a physical barrier to the spread of mistletoe. Utilizing white fir in surrounding and lower slope positions around any large and infected ponderosa pine.

² These units do not have a large tree removal component due to the number threshold being below 4TPA for ponderosa pine. This strategy was adapted from Deschutes County Forest Collaborative recommendations.

Dwarf Mistletoe saw-log marking guidelines-

Across all areas- favor all ponderosa pine (any size) that are clean or with a DMR rating ≤ 3 . When leaving DM infected ponderosa pine select those with lowest DMR rating and those that have infections lower in their canopies. Strive to thin from below for ponderosa pine within these parameters and within bounds of nearby dwarf mistletoe influences.

Pre-determined large clump areas in Units 21/24 - (5 acres Unit 21) and (3 acres Unit 24)

- I. No marking of ponderosa pine trees $>21''$ dbh within this area (Figure below). The boundary area marking does not apply (explained below). The exception to this would be to retain all small old growth trees that are spatially conjoined (or otherwise next to) a $>21''$ dbh ponderosa pine. Remove all white fir and lodgepole in these areas. Shoot for an 80 sqft basal area target ensuring a variable distribution and configurations of trees.

Large ponderosa pine marking (Units 21, 22, 26)

- I. Retain $< 21''$ dbh ponderosa pine with a DMR ≤ 3 within a 20-100 (60 average) basal area range.
- II. Retain all lodgepole pine
- III. Identify any DMR 4+ rated $>21''$ dbh ponderosa pine for removal if they occur as 3 or less trees in a group. The distance determination is 1 chain (66ft) from one another to make a group. NOTE do not count those small old growth pine that are spatially conjoined with another separately, consider these as one tree.
 - a. If one of these DMR 4+ trees has been identified look to see if there are 3 more at 1 chain connected distances. **IF** they are all connected by one chain then no marking of these ponderosa pine trees will occur. **If not**, mark all three trees with DMR 4+ for removal.
 - b. If an individual or 3 tree group is marked for removal then remove all white fir within 66ft distance.
 - c. In the event of a clump of 4 or more retain all white fir in a 66ft distance surrounding the outermost portion of the clump and remove any white fir in the interior of the clump.
 - i. Note- follow up thinning for adjoining stands will include prescription elements that include buffer thinning into plantations.

Outside those areas in above and the whole of Unit 15, 23, 24, 25, 27³

- I. Retain all lodgepole pine
- II. Retain the lowest infected ponderosa pine where possible (DMR ≤ 3)
- III. Retain any ponderosa pine $>21''$ dbh
- IV. Retained basal areas should range from 10-120 sqft BA/ac (average 60)
- V. In portions of units there are isolated $21''+$ DMR 4+ ponderosa pine (especially in the southern area of Unit 21). In these areas a screening technique of white fir will be used to “block” potential mistletoe spread. Where possible retain all white fir within 66ft ringed area surrounding these individual and groups of trees.

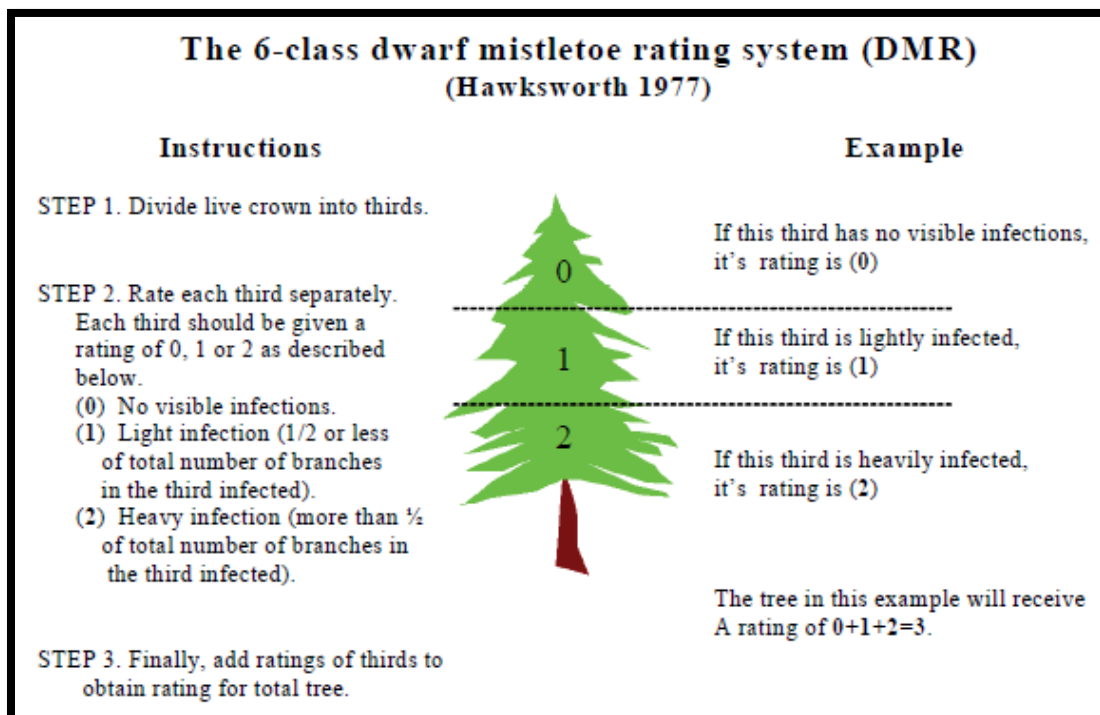
³ By result of stand structures, treatments follow those described in DCFP dwarf mistletoe and do not have large trees removed. This treatment is similar in standard thinning treatment with DM removal prioritized when feasible. DM will be retained in most areas, but infection abundance will be reduced.

- VI. Outside of the ringed ponderosa pine, retain any white fir that can help mitigate spread to adjacent trees/areas. Outside of this consideration zone remove remaining white fir.
- VII. Reduce white fir stocking between these white fir-surrounded dwarf mistletoe-infected ponderosa pine retaining any ponderosa pine (all sizes) that are free or have a low infection (in lower canopy) of mistletoe. In effect low density areas will be created between the ringed ponderosa pine that may be planted at a later date.
- VIII. Ponderosa pine thinning will be generally from below unless thinning is done to “isolate and confine” Thinning in these locations will be generally from below. Only choose a larger tree over a small one in order to create clumpy structure or reduce any dwarf mistletoe that may be present.

Dwarf Mistletoe non-saw thinning guidelines

Goal: to reduce mistletoe within the units to the greatest extent possible while maintaining a non-saw component at roughly 30TPA (20 TPA ponderosa pine⁴ and 10 TPA white fir) (0-8.9”dbh). This target density (using table 1 above as a reference guide) would result in the removal of (approximately) 95% of the 0-5”dbh size class and 65% of the 5-8.9”dbh size class. This size class thin is NOT intended to result in an even distribution of trees but rather a distribution of trees (and sizes) that favors their release and low potential to encounter, distribute and/or block dwarf mistletoe. As a result, it is acceptable and expected to have areas with little to no trees in this size class (especially when overstory trees with mistletoe are present) and other areas with a higher tree density in this size class due to absence of overstory or dominance of white fir. In effect, the presence and level of mistletoe in the 9”+dbh (saw log) trees will directly affect localized non-saw tree presence/abundance.

Hawksworth Dwarf Mistletoe Rating System-



Remove most highly infected (DMR 3+ rated) ponderosa pine trees 0-8.9” dbh from all areas.

⁴ The exact amount of ponderosa pine retention is unknown since the level of infection is the driver to retention/removal. 20 TPA was given as a best guess from ground reconnaissance.



Figure 1- Photo indicating high branch infections

Alternative 2- selection

Non-saw material including 0-8.9" dbh

- All lodgepole to be retained and counted as ghost trees (ignored).
- Remove all ponderosa pine with DMR rating 3-6 (heavily infected throughout canopy)- retain all others thinning from below to ~10-20ft spacing. Tree health and vigor takes priority over spacing. Tree preference is to retain the healthiest disease free ponderosa pine.
- Retain approximately 10 TPA of white fir (5-8.9" dbh)- this frequency is a guide with some areas far exceeding this and other areas absent of white fir.
 - a. Remove all white fir within 66ft of yellow painted trees (these are >21" dbh ponderosa pine that are arranged in clumps of 3 or less)
 - b. Retain all non-saw white fir within the interstitial spaces of orange painted white fir that are acting to "block" mistletoe influences.
 - i. In the units there are 2 general locations of orange painted white fir.

- 1) 66ft ringed areas screen zones (retained areas from above) that are left to screen a coordinating 21+”dbh DMR 4+ ponderosa pine clump of 4 or more trees OR
- 2) Randomly located white fir among the unit.
- **Emphasis of non-saw white fir leave trees will be in those locations that are within the 66ft screen zone surrounding the remnant ponderosa pine that would be retained (not painted in yellow) which also have a leave component of orange painted white fir.**

Alternative 3- selection

Non-saw material including 0-8.9”dbh

- All lodgepole to be retained and counted as ghost trees (ignored).
- Remove all ponderosa pine with DMR rating 3-6 (heavily infected throughout canopy)- retain all others thinning from below to ~10-20ft spacing. Tree health and vigor takes priority over spacing. Tree preference is to retain the healthiest disease free ponderosa pine.
- Retain approximately 10 TPA of white fir (5-8.9” dbh) – this frequency is a guide with some areas far exceeding this and other areas absent of white fir.
 - a. Retain all non-saw white fir within the interstitial spaces of orange painted white fir that are acting to “block” mistletoe influences.
 - i. There are 2 general locations of orange painted white fir.
 - 1) 66ft ringed areas screen zones (retained areas from above) that are left to screen a coordinating 21+”dbh DMR 4+ ponderosa pine clump of 4 or more trees OR
 - 2) Randomly located white fir among the unit.
- **Emphasis of non-saw white fir leave trees will be in those locations that are within the 66ft screen zone surrounding the remnant ponderosa pine that would be retained (not painted in yellow) which also have a leave component of orange painted white fir.**

Major difference between Alt 2 and 3 are the “yellow” painted ponderosa pine. If Alt 2 is chosen all white fir in these areas are removed if Alt 3 is chosen a rate of 10 TPA will be retained.

Optional work item-

In addition to the strategic thinning approach mentioned above, a follow up step of lower branch pruning may be scheduled. It is assumed that by the above activities (both saw and non-saw thinning) the resultant leave trees will have most of the units mistletoe confined by white fir, isolated by a spatial distance or located within the lower canopy.

Work falling under this work item includes lower branch pruning of saw and non-saw trees that were maintained as “leave” trees. In this work activity, all branches will be pruned to one whorl higher than the lowest mistletoe infection maintaining at least 25% live crown (whichever occurs first).

Pruning will consist of removing the entire branch to within ~1/4” of the branch collar (figure 3).

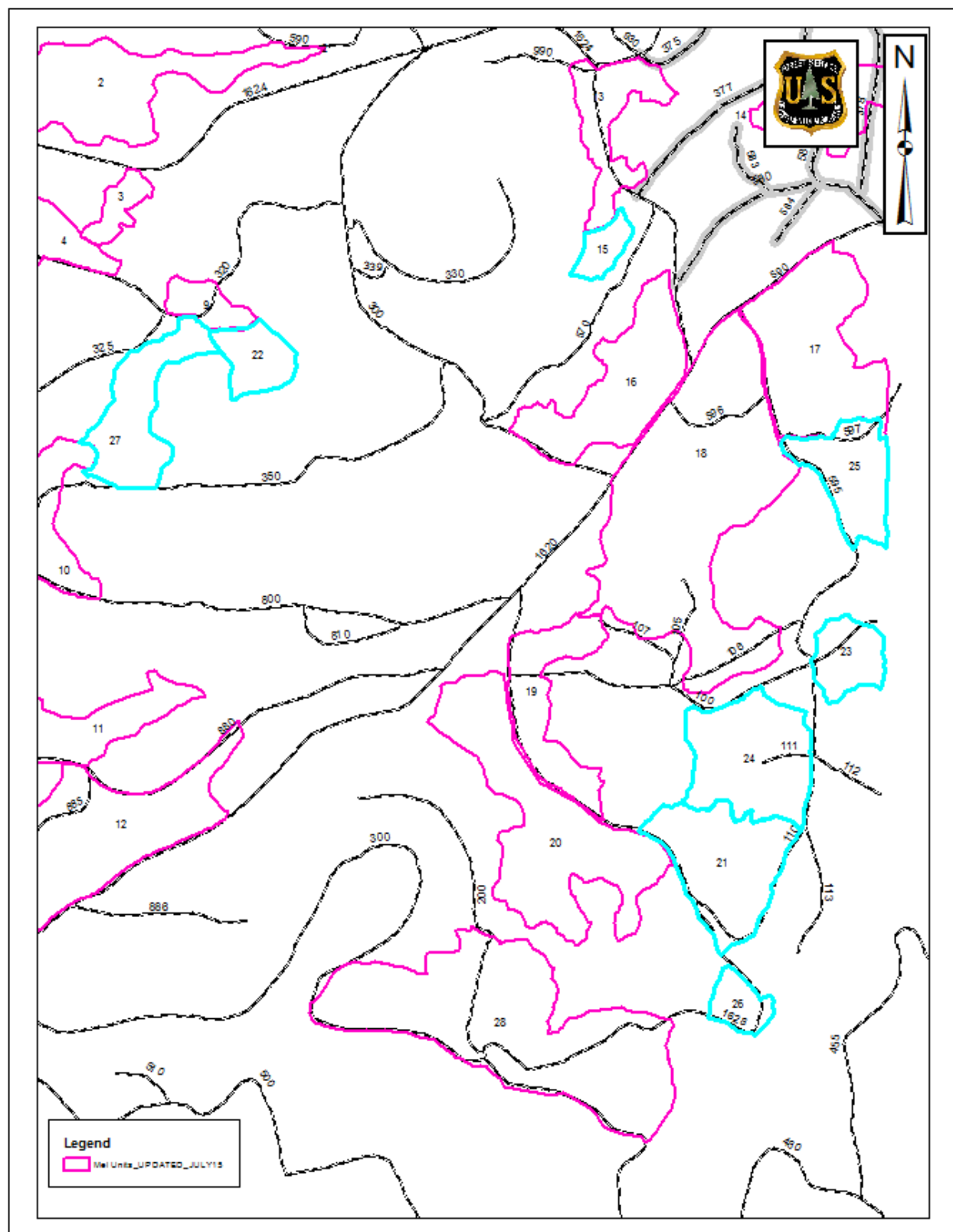


Figure 2. Highlighted blue (selected) units are those covered in this prescription.

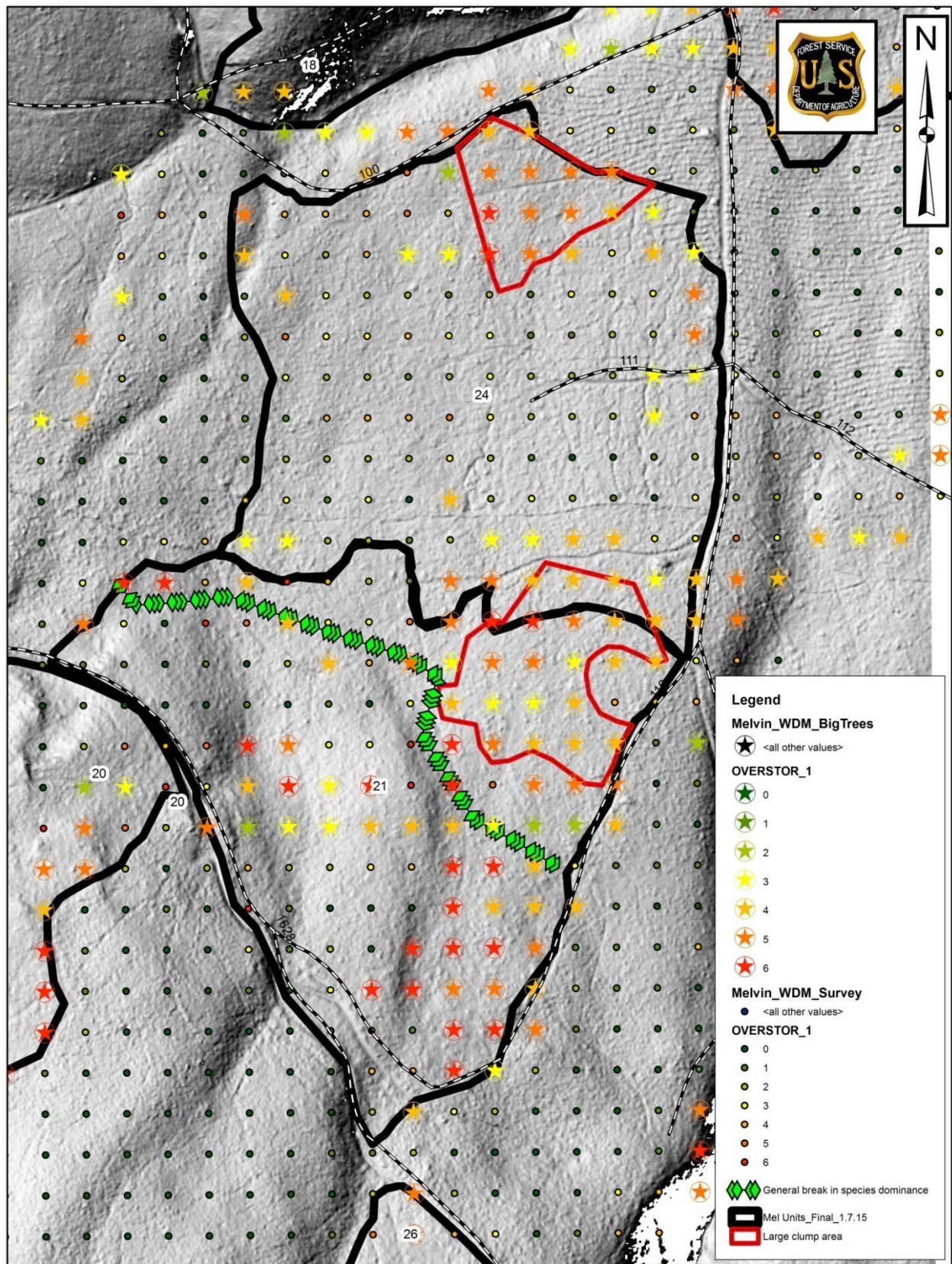


Figure 3. Location of DMR scores within Units 21 and 24. Includes large clump areas that were pre-identified.

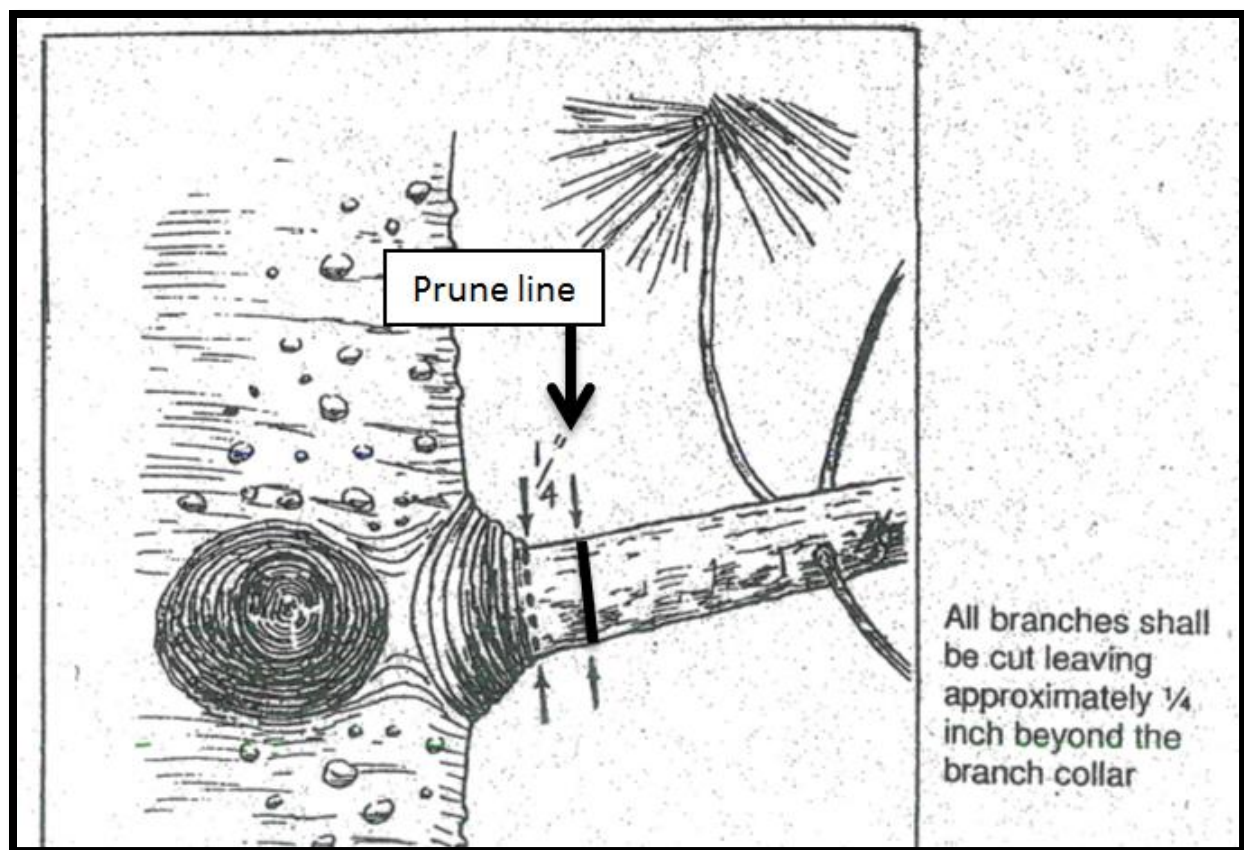


Figure 4. Pruning figure representing desirable cut/ prune location on branches.